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EXAMINER

ZIMMERMAN, GLENN

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2879

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/680,291

Applicant(s)

MORAVSKY ET AL.

Examiner

Glenn Zimmerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-96 is/are pending in the application.
- 4a) Of the above claim(s) 1-66 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 85-88 is/are allowed.
- 6) ☒ Claim(s) 67, 68 and 89-96 is/are rejected.
- 7) ☒ Claim(s) 69-84 and 87 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of emission product in Paper No. 10 is acknowledged. The traversal is on the ground(s) that Groups I and II are related and are not independent. This is not found persuasive because the MPEP 802.01 states that "The law has long been established that dependent inventions (frequently termed related inventions) such as used for illustration above may be properly divided if they are, in fact, 'distinct' inventions even though dependent." Also the number of claims 96 in this particular case puts a serious burden on the examiner, which is in line with MPEP 803.

The requirement is still deemed proper and is therefore made FINAL.

### ***Information Disclosure Statement***

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Specification***

The disclosure is objected to because of the following informalities: At several location in the specification word "ration" is used such as page 28 lines 4,16 and 28 and also page 29 line 1. The examiner suggests changing the word "ration" to "ratio" at these and all other occurrences within the specification. On page 10 line 7 the examiner suggests changing "te" to "the". On page 19 line 28, the examiner suggests changing "C7-0" to "C70". On page 4 line 26, the examiner suggests changing "Continuos" to "Continuous".

Appropriate correction is required.

### ***Claim Objections***

Claims 70, 73, 78, 79, 87 are objected to because of the following informalities: Claims 70 and 73 contains the parenthetical wording "(less than 5)", and this wording does not adequately point out the metes and the bounds of the claim. The wording in the parenthesis may or may not be a limitation. In claim 70, the examiner suggests changing the "(less than 5)" to ",which is less than 5 walled,". In claim 73, the examiner suggests changing the "(less than 5)" to ",which is less than 5 walled,". In claim 78 line 2, the examiner suggests changing "is" to "". In claim 79 lines 1 and 2, the examiner suggests changing "wherein majority of the double wall nanotubes with diameter" to "wherein the majority of the double wall nanotubes have a diameter". In claim 87 line 2,

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the examiner suggests changing "he" to "the". In claim 87 line 3, the examiner suggests changing "tot he" to "to the".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 89 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 89 points to itself when it uses the wording "as defined in claim 89" which is indefinite.

A 112 2<sup>nd</sup> paragraph rejection has been determined for claim 89, as written about above. However, a further evaluation of the claim will be done while interpreting "as defined in claim 89" as "as defined in claim 88".

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 67 and 90-96 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. U.S. Patent 6,471,936.

Regarding claim 67, Chen et al disclose a solid substance composed by more than one half by weight of hollow carbon nanotubes having walls consisting essentially of two layers of carbon atoms (**col. 4 lines 25-35; Fig. 1b, 1d, 2b and 2d**). The solid substance is inherently more than one half by weight of hollow carbon nanotubes as that is all they mention in the claim so it is more than one half by weight but entirely by weight.

Regarding claims 90-96, Chen et al. disclose a fullerene material comprising double walled carbon nanotubes (**Fig. 1b, 1d, 2b and 2d**) produced by the method of claim 1 (**col. 4 lines 25-35**).

As to limitation produced by the method of claim 1 in claim 90, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 2 in claim 91, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 3 in claim 92, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 7 in claim 93, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 11 in claim 94, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 15 in claim 15, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 18 in claim 96, it is the process step incorporated into which renders the claim as a product-by-process.

The courts have been holding that: “- In spite of the fact that a product-by-process claim may recite only process limitation, it is the product which is covered by the claim and not the recited process steps- - . (In re Hughes, 182 USPQ 106) - -“. Also - - Patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. (In re Pilkington, 162 USPQ 147) - -.” Accordingly, “- - a rejection based on 35 U.S. C. section 102 or alternatively on 35 U.S. C. section 103 of the statute is eminently fair and acceptable.” (In re Brown and Saffer, 173 USPQ 685 and 688). - - The determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made- -. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985).

As such, n patentable weight is given to process steps recited in claims 90-96.

Claims 90-96 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. U.S. Patent 6,346,136.

Regarding claims 90-96, Chen et al. disclose a fullerene material comprising double walled carbon nanotubes (**col. 3 lines 24-36**) produced by the method of claim 1 (**col. 3 lines 25-30**).

As to limitation produced by the method of claim 1 in claim 90, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 2 in claim 91, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 3 in claim 92, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 7 in claim 93, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 11 in claim 94, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 15 in claim 15, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 18 in claim 96, it is the process step incorporated into which renders the claim as a product-by-process.

The courts have been holding that: “-In spite of the fact that a product-by-process claim may recite only process limitation, it is the product which is covered by the claim and not the recited process steps- - . (In re Hughes, 182 USPQ 106) - -“. Also



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- - Patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. (In re Pilkington, 162 USPQ 147) - -." Accordingly, "- - a rejection based on 35 U.S. C. section 102 or alternatively on 35 U.S. C. section 103 of the statute is eminently fair and acceptable." (In re Brown and Saffer, 173 USPQ 685 and 688). - - The determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made- -. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985).

As such, no patentable weight is given to process steps recited in claims 90-96.

Claim 68 is rejected under 35 U.S.C. 102(e) as being anticipated by Amey, Jr. et al. U.S. Patent 6,409,567.

Regarding claim 68, Amey, Jr. et al. disclose an electron-emissive material comprising a surface (**col. 10 lines 31-32**) consisting primarily of a plurality of emissive tubules (**col. 10 lines 30-32**) wherein each of the plurality of emissive tubules is a nanotube with a controlled number of graphene layers (**col. 10 lines 20-31**).

Claims 90-96 are rejected under 35 U.S.C. 102(b) as being anticipated by Kiang et al. J. Phys. Chem. 1994, 98, 6612-6618.

Regarding claims 90-96, Kiang et al. disclose a fullerene material comprising double walled carbon nanotubes (**Fig. 4b; page 6615**) produced by the method of claim 1.

As to limitation produced by the method of claim 1 in claim 90, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 2 in claim 91, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 3 in claim 92, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 7 in claim 93, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 11 in claim 94, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 15 in claim 15, it is the process step incorporated into which renders the claim as a product-by-process.

As to limitation produced by the method of claim 18 in claim 96, it is the process step incorporated into which renders the claim as a product-by-process.

The courts have been holding that: “- -In spite of the fact that a product-by-process claim may recite only process limitation, it is the product which is covered by the claim and not the recited process steps- - . (In re Hughes, 182 USPQ 106) - -“. Also - - Patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. (In re Pilkington, 162 USPQ 147) - -.” Accordingly, “- - a rejection based on 35 U.S. C. section 102 or alternatively on 35 U.S. C. section 103 of the statute is eminently fair and acceptable.” (In re Brown and Saffer, 173 USPQ 685 and 688). - - The determination of the patentability of product-by-process claim is based on the

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product itself rather than on the process by which the product is made- -. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985).

As such, no patentable weight is given to process steps recited in claims 90-96.

***Allowable Subject Matter***

Claims 85-88 are allowed.

Claim 89 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 69-84 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 69, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests an electron-emissive material comprising including the combination of all the limitations as set forth in claim 69, and specifically wherein the number of graphene layer is two could not be found elsewhere in prior art.

Regarding claims 69, 71, 72, 76-84, claims 69, 71, 72, 76-84 are allowed for the reasons given in claim 69, because of their dependency status on claim 69.

Regarding claim 70, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests an electron-emissive

material including the combination of all the limitations as set forth in claim 70, and specifically wherein the electron-emissive material is composed of a mixture of double wall and few walls nanotubes could not be found elsewhere in prior art.

Regarding claims 73 and 74, claims 73 and 74 are allowed for the reasons given in claim 70, because of their dependency status on claim 70.

Regarding claim 75, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests an electron-emissive material including the combination of all the limitations as set forth in claim 75, and specifically wherein each cylindrical layers of the nanotubes having a lattice spacing of 0.35-0.45 nm could not be found elsewhere in prior art.

Regarding claim 85, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a field emission device including the combination of all the limitations as set forth in claim 85, and specifically the electron-emissive material having a surface distributed over the surface, wherein each of the plurality of emissive element is a double walled nanotubes, could not be found elsewhere in prior art.

Regarding claims 86-89, claims 86-89 are allowed for the reasons given in claim 85, because of their dependency status on claim 85.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Livingston et al. U.S. Patent 6,400,088 disclose an Infrared

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Carbon Nanotube Detector. Yang et al. U.S. Patent 6,511,527 disclose a Method of Treating Exhaust Gas. Kennel U.S. Patent 6,156,256 disclose a Plasma Catalysis of Carbon Nanofibers. Dimitrijevic et al. U.S. Patent Application Publication US 2001/0024078 disclose Diamond/Carbon Nanotube Structures for Efficient Electron Field Emission. Green et al. U.S. Patent 6,090,363 disclose a Method of Opening and Filling Carbon Nanotubes. Saxe U.S. Patent 6,529,312 disclose Anisometrically Shaped Carbon And/Or Graphite Particles, Liquid Suspensions And Films Thereof And Light Valves Comprising Same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Zimmerman whose telephone number is (703) 308-8991. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is n/a.

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Glenn Zimmerman

April 3, 2003

  
ASHOK PATEL  
PRIMARY EXAMINER